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BOOKS RECEIVED.

THE CONSTRUCTION OF GAS-WORKS AND THE MANUFACTURE AND DISTRIBUTION OF COAL GAS. By William Richards, C. E. 6th edition. Crosby, Lockwood and Co., 7, Stationer's Hall Court, London. 1880.

This is a new and enlarged edition of the work originally written by Samuel Hughes, C. E., but now enlarged, re-written by William Richards, C. E., who has brought his facts down to the most recent knowledge of the subject.

At a time when a revolution in our methods of illumination has become an established fact, and the death knell of gas has already been sounded, it is very convenient to find a hand-book full of the most valuable details respecting that method of illumination, written by one who is evidently a master of the subject. We find a great number of good engravings and many valuable tables. In view of the recent serious explosion of a gas main in London, England, the chapter on "Gas explosions" will be read with interest.

ELECTRIC LIGHT: ITS PRODUCTION AND USE. By J. W. Urquhart, C. E. Edited by F. C. Webb, M. I. C. E., M. S. T. E. Crosby, Lockwood & Co., London. 1880.

The object of the author is to present for general reading an account of the various methods of obtaining the electric light, both from voltaic and galvanic batteries, and it also treats of the various forms of dynamo-electric machines.

This work will serve the very useful purpose of placing within reach of those who are not acquainted with the history and growth of electric lighting, a clearly written description, well illustrated with wood engravings. It is not a text book, and the author makes no pretensions to teach electricians the art of electric lighting, but it is, in fact, a popular guide to the subject.

The rapid development in the various forms of electric lighting led to a re-arrangement of the book, even while it was being written; it is not therefore surprising to find that on certain points the work is already obsolete. The chapter on the Edison electric lamp was written twelve months since, and is devoted chiefly to his experiments with incandescent platinum, which has been long since abandoned, while the author merely speaks of the carbon lamps to prophesy their failure. Reading this, at this date, when every difficulty in the way of their practical use has been removed, and arrangements are in progress to produce them in sufficient numbers to permit their general adoption, we cannot but regret that prejudice has been allowed to derange the better judgment of those who have assumed to lead public opinion on this subject.

We do not propose to examine too critically what is admitted to be a popular work, and while we are not in accord with much we find in the book, we have no doubt that the numerous wood-cuts of electric generators and other apparatus will be most useful to those who desire to acquaint themselves with the various methods of electric lighting.

MANUAL OF THE ALKALI TRADE, INCLUDING THE MANUFACTURE OF SULPHURIC ACID, SULPHATE OF SODA AND BLEACHING POWDER.—By John Lomas. Crosby, Lockwood & Co. London. 1880.

This is a handsome volume of three hundred and fifty pages, containing two hundred and thirty-two illustrations and working drawings, and provides a complete hand-book for those intending to manufacture Alkalis, or for those already in the field who desire to improve their plant, or become practically acquainted with the latest developments of the trade; it also may be useful for manufacturers to place in the hands of their managers and foremen, as a useful guide in their daily rounds of duty.

The author appears to have had fifteen years' of practical experience as an alkali manufacturer, during which time he states he has erected new plants, remodeled old works, and trained managers. We advise all engaged in the alkali manufacture, to procure this most practical work, as from the examination we have made of it, we feel sure a perusal will be the means of saving infinite time, patience and labor.

NOTES AND QUERIES.

[1.] In reply to the Query of J. H. G. in regard to Tuckahoo or Indian Bread, I regret not being able to give all the particulars asked for, but the following extract from the Treasury of Botany may be useful:

"Tuckahoo is the Americo-Indian name for a curious tuberos production, which is dug out of the ground in several parts of the United States, and which has been referred by Fries to the genus *Pachyma*. Like *Sclerotium*, however, *Pachyma* has no fruit, and there is some reason to doubt whether it has any pretensions to be classed with *Fungi* at all. It is composed entirely of pectic acid, and it is very probable that it is a peculiar condition of some root, though of what plant has not at present been ascertained. One similar production at least has been found in China, where it is supposed to possess medicinal virtues; and there is reason to believe that another exists there, attaining a diameter of several inches like the American Tuckahoo. As may be supposed from its chemical constitution, it affords a nutritive article of food, for which purpose it is dug up by the natives like the *Mytilia* or Native Bread of Tasmania, with which, however, it does not correspond in character. It is also employed occasionally as a material for making jelly, for which it is well adapted, the pectic acid of currants and other fruits being the principle which disposes their juice when boiled to form a jelly-like mass. The principal objection which is brought forward against the supposed phaenogamous origin of the production is the absence of all trace of vascular or cellular structure like that of phaenogams, or of bark, except such as may be supposed to arise from mere contact with the soil; but the dissimilarity of its structure and that of *Fungi* is quite as great, and the conversion of a fungus into pectic acid would be more surprising."

J. R.

GENERAL NOTES.

CURIOUS ELECTRIC PHENOMENON.—At about 4.30 P. M. this day a severe thunder storm with a deluge of rain came up from the north-west, and lasted about an hour. At 5.30 my wife was standing at the window watching the receding storm, which still raged in the south, just over Leicester, when she observed, immediately after a double flash of lightning, what seemed like a falling star, or a fire-ball from a rocket, drop out of the black cloud about 25° above the horizon, and descend perpendicularly until lost behind a belt of trees. The same phenomenon was repeated at least a dozen times in fifteen minutes, the lightning flashes following each other very rapidly, and the thunder consisting of short and sharp reports. After nearly every flash a fire-ball descended. These balls appeared to be about one-fifth or one-sixth the diameter of the full moon, blunt and rounded at the bottom, drawn out into a tail above, and leaving a train of light behind them. Their color was mostly whitish, but one was distinctly pink, and the course of one was sharply zig-zagged. They fell at a rate certainly not greater than that of an ordinary shooting star. I have never witnessed a phenomenon of this kind myself, but my wife is a good observer, and I can vouch for the trustworthiness of her report.

F. T. MOTT.

Bristol Hill, near Leicester, June 22, (Nature).

MM. LE BON and NOEL have extracted from tobacco smoke the following products, which they recently presented to the French academy in three flasks: 1, Prussic acid; 2, an alkaloid of agreeable odor, but as poisonous as nicotine; 3, aromatic principles still undetermined, but contributing, with the alkaloid mentioned, to give tobacco smoke its perfume. The alkaloid in question is thought to be identical with a compound, collidine, the existence of which has been observed in the distillation of various organic substances, but whose physiological and toxical properties have been overlooked.